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MEMORANDUM

Impact of the Weather on the US Bombing Program During the Next Two Months

I. Introduction

Possibly more than any other one factor, weather conditions have influenced the conduct of air operations over North Vietnam during the course of the past seven years. Weather is a limiting factor throughout most of the year, with no season experiencing extended period of clear, favorable conditions. Although the monsoonal airflows are the chief architects of weather patterns over Indochina, terrain features -- most notably the Chaine Annamitique mountains forming the western border of North Vietnam -- also strongly influence local weather conditions.

Thus far, LINEBACKER operations have been carried out under some of North Vietnam's worst weather, especially in the areas north of the 20th Parallel. During the next two months, visibility conditions should improve considerably north of 20 degrees as North Vietnam passes through the autumn transition phase from the southwest to the northeast monsoonal flow patterns. This will be a period of rapidly changing local weather conditions, interspersed with several expected typhoons, clearing skies in the north and northwestern regions, and heavy clouds and rains along the coastal and Panhandle portions.

II. Impact of Weather Thus Far

Operation LINEBACKER was launched at the start of the southwest monsoon, a four month period extending into

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October bringing torrential rains and flooding to Cambodia, Laos and northern North Vietnam (the Red and Black River Delta areas). It is also one of the two worst periods for conducting air operations over North Vietnam, particularly those areas north of the 20th Parallel, where most of the country's lucrative targets are located. Fortunately, this year's southwest monsoon season has been unusually mild, yielding about 50 percent of the average expected rainfall, and bringing noticeably fewer days of inclement weather over North Vietnam. In spite of the comparably better weather profile this summer, the daily weather cycle has not been conducive to the scheduling of lucrative and primary bombing targets over North Vietnam, especially in and north of the Hanoi-Haiphong axis. During the first 100 days of LINEBACKER field weather reports indicated that fewer than 30 days of favorable conditions for visual delivery of ordnance were available for targets north of 20 degrees. Panhandle weather was little better; however, the almost daily break in the weather in this area during the late morning and early afternoon hours, permitted sorties diverted from northern targets to perform armed reconnaissance against LOCs and unscheduled targets of opportunity.

III. Weather Conditions Expected During September and October

In general, the most favorable periods for tactical air operations over northern North Vietnam should occur between now and December. The Panhandle region, however, will experience progressively poorer weather -- heavy clouds, fog, overcast skies -- from now through March. September and October are transition months, a period which will see the ending of the southwest monsoon season and the entrenchment of the northeast monsoonal flow out northern China. Because of the peculiar location of the Chaine Annamitique Range, running at a right angle to the prevailing monsoon winds, a sharp contrast in weather conditions will persist between the northern and southern portions of North Vietnam well into December. In addition, several devastating typhoons or tropical storms should strike the coasts of North and South Vietnam during the intervening months, which will preclude all air operations for several days at a time.

In the northern half of North Vietnam, conditions for air operations begin to improve during September. There is a progressively marked decrease in amounts of cloud cover, due to decreasing thunderstorm activity and the beginning of the relatively dry northeast monsoon flow sweeping out of China. Early morning and late afternoon hours generally provide the best periods for visual bombing. This fair-weather pattern in the north begins to deteriorate during December and is well under the influence of the "crachin"* by early January.

The heaviest rains and cloud conditions of the year can be expected over the Panhandle during September and October. The frequent thunderstorm activity during the afternoons and nights will seriously hamper tactical air operations, as will heavy cloud buildups during the morning hours.

IV. Changing Weather Patterns and US Bombing Program

In a 22 August memorandum, An Assessment of the US Bombing and Mining Campaign in North Vietnam, we recommended that a far greater proportion of the total US air effort be directed against the enemy road and rail system in northern North Vietnam (i.e., above the 20th Parallel). During LINEBACKER, nearly 80% of the effort thus far has been concentrated in the area south of the 20th Parallel, an area in which the enemy's logistic system is so widely dispersed that the likelihood of inflicting significant damage to it is marginal. During the next two months, the transition to the northeast monsoon dry season should bring improved weather to most parts of northern North Vietnam and more favorable conditions for tactical air activity, especially armed reconnaissance strikes against visibly sighted logistic targets of opportunity.

During early September when heavy rainfall and limited air-to-ground visibility usually predominate any air program aimed at slowing the flow of supplies would be greatly handicapped. Strikes would frequently have to be cancelled and the poor visility would greatly reduce the effectiveness of armed reconnaissance strikes along the main LOCs. By the end of September, however, the northeast monsoon should bring weather conditions much more conducive to air operations in the northern part of the country. During this period, air operations can be planned with little fear that weather will be an inhibiting factor.

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* Crachin is a period of persistent low overcast, fog and drizzles extending over the coastal and lowland areas, virtually obscuring the ground from January through early April.

However, the shift to the northeast monsoon which causes improved flying conditions, also aids the enemy in his logistics effort. During the wet season, flooding traditionally occurs and restricts overland travel by washing out some primary and many secondary roads and part of the rail network. As a result, truck and rail traffic must be funneled over a smaller route network. Thus, the transition to the northeast monsoon aids the enemy by making more roads available and repairs easier to complete, lessening the threat of bottlenecks.

In the southern part of North Vietnam, the shift to the northeast monsoon during the next two months will probably result in poor weather conditions unfavorable to air operations aimed at reducing the flow of supplies. In addition, the road network and rail system is a low density target system and is highly redundant and well constructed. Historically, North Vietnam has always been able to move large quantities of supplies through this area, and the changing weather conditions in this area during the next two months should help North Vietnam in its effort to continue to do so.

Another conclusion in our memorandum was that the best way to restrict petroleum imports was to continue the denial of seaborne imports, together with sustained bombing of road and rail traffic and the new pipeline segments between Hanoi and P'ing-hsiang, China, rather than the continued bombing of petroleum storage sites in North Vietnam. Several additional factors need to be mentioned concerning the bombing of the new petroleum pipelines between Hanoi and P'ing-hsiang. The most effective way of interdicting these pipelines is with repeated B-52 strikes, rather than with marginally effective tactical sorties. B-52 aircraft fly at high altitudes above the weater and targeting is done primarily by radar without recourse to visual acquisition of targets. Consequently, if B-52 aircraft were employed against these targets, changes in the weather should not influence their effectiveness.

In summary, improving weather conditions in the northern part of North Vietnam during the next several weeks should make US air strikes against transportation targets more fruitful. On the other hand, strikes in the southern part of the country will be hampered as weather conditions worsen and visibility is restricted. Finally, the changing weather pattern during the next two months should have little effect on possible B-52 strikes against the POL pipeline or against targets which already have been neutralized to the maximum extent feasible or were marginal targets to begin with.

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